

Bioregional fire patterns – implications for management

By Leasia Felderhof



Overview

- Recap on my project
 - Outline the methods used to map fire patterns
 - Compare North West Qld with Cape York Peninsula
 - Implications and suggestions
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Project outline

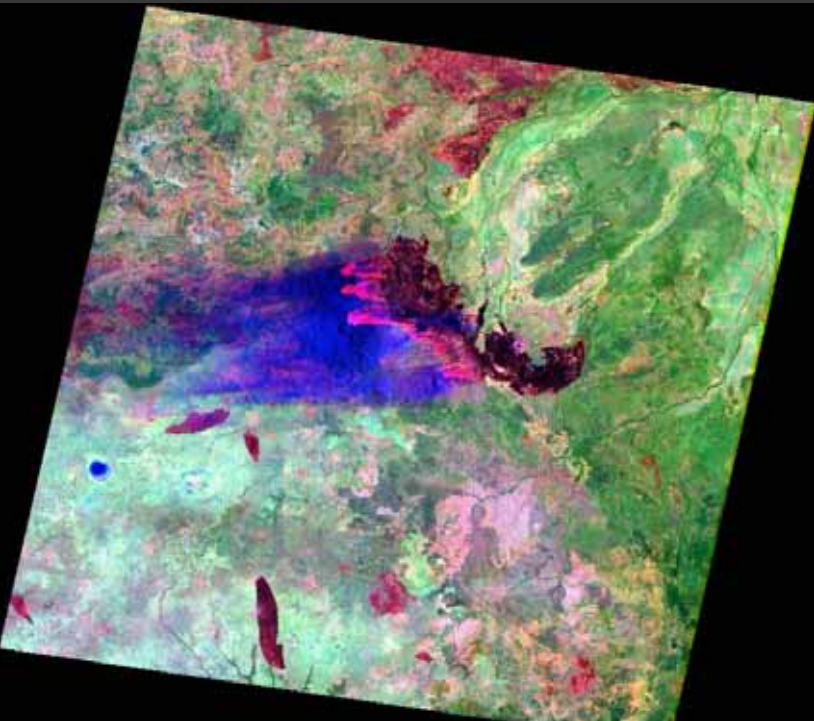
- Located in NW QLD
- Initiated by Ergon Energy
- The overall goal is to develop guidelines for fire management under the powerline

My approach

1. Investigate fire patterns at the regional scale
 2. Consider issues such as fuel load accumulation, fire behaviour and patchiness, species response to fire (recovery, heat of combustion, conductivity of flame)
 3. Develop a fire risk model
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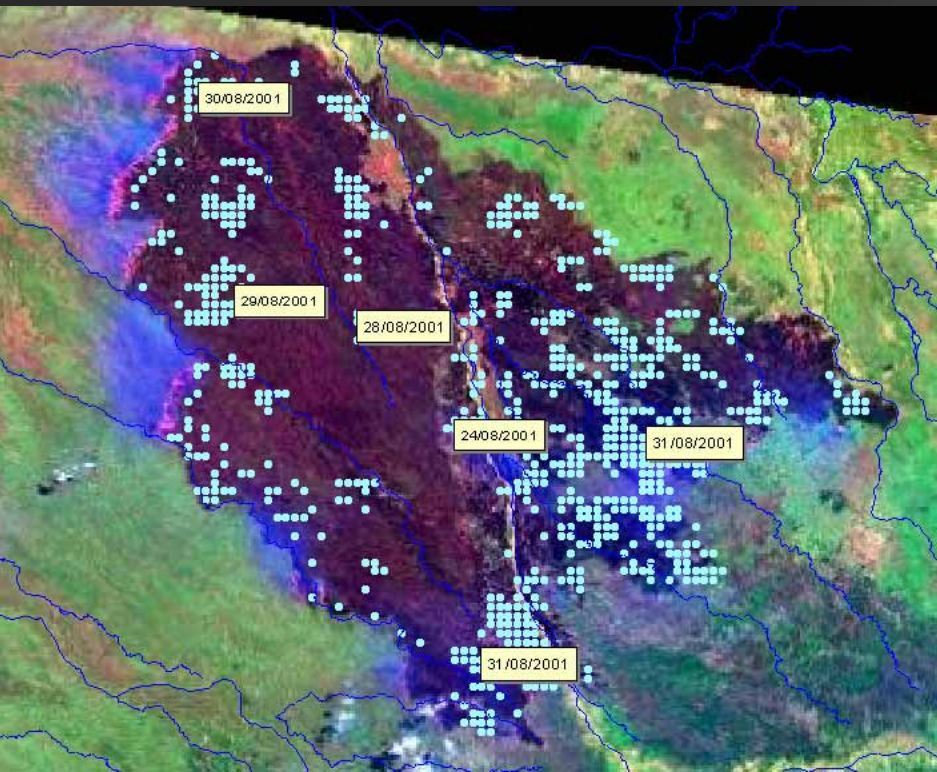
Regional fire patterns

- Satellite imagery was used to map fires between 1998 and April, 2004



- Fire scars were identified from monthly Landsat 'quicklooks'
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Hotspots provide confirmation



- Hotspots and firescars used together for accuracy
- Hotspots give an indication of fire date, duration and direction of spread
- Same method has been used on Cape York Peninsula

Some issues

- Cloud cover – gaps in imagery
 - Technology advances – changed to Modis
 - Resolution – prevented mapping in fine detail or detecting fires <20ha
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Data verification

- Checked mapping accuracy with actual Landsat imagery (90-97%)
 - Printed fire scar maps of properties for discussion with landholders (good correlation)
 - Field inspection (75 transects across the bioregion)
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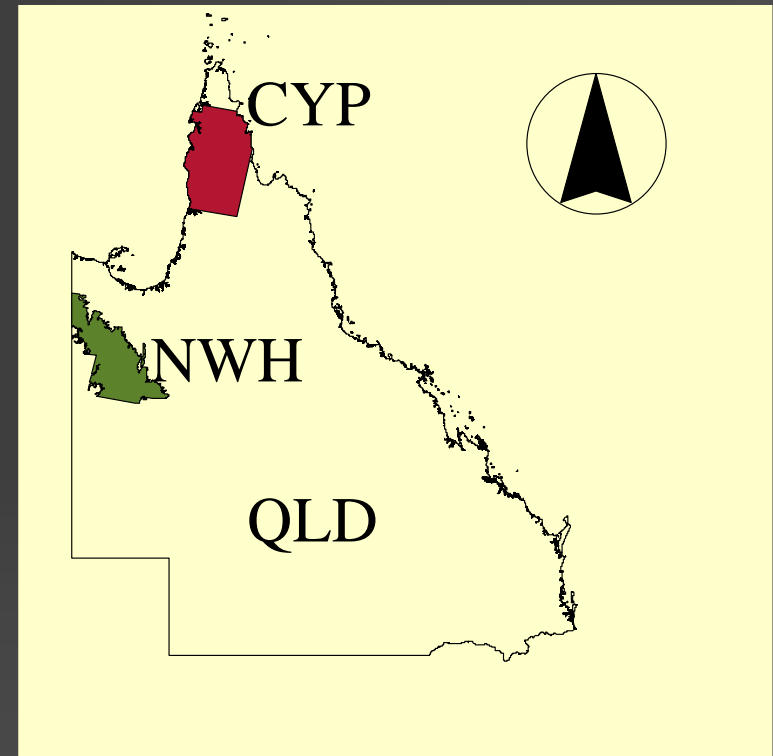
Pattern is preserved



- Pattern is preserved in the landscape for 3-4 years
 - Overall mapping confidence about 90%
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Comparing bioregions

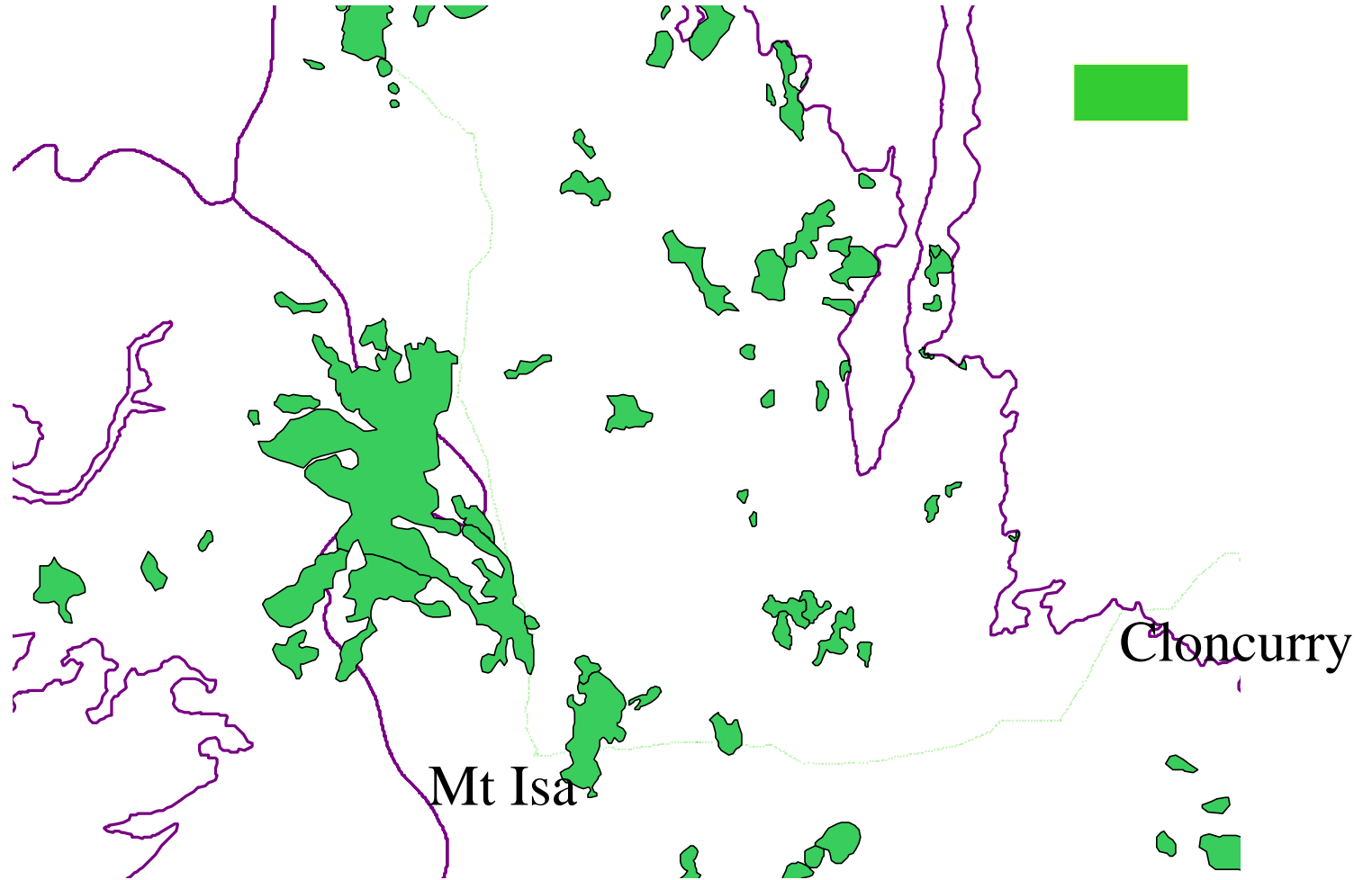
- Secondary data for CYP
- Mapping back to 1999 using similar methods
- Mapped area:
CYP: ~ 7 million ha
NWH: ~ 5.5 million ha



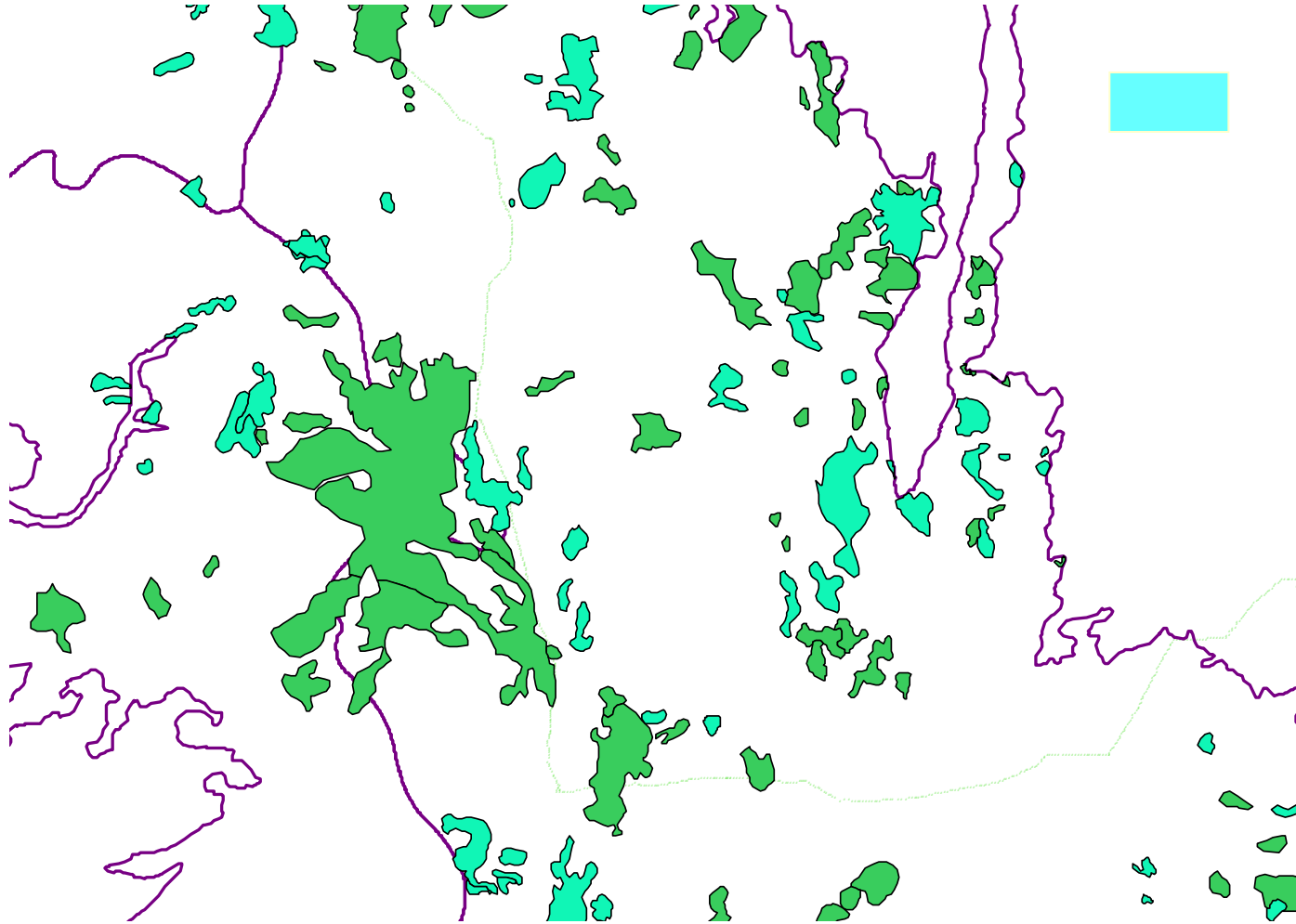
The results (!)

- Cape York Peninsula burns more extensively and more often than the North West Highlands
 - Fire patterns are strongly related to wet season rainfall
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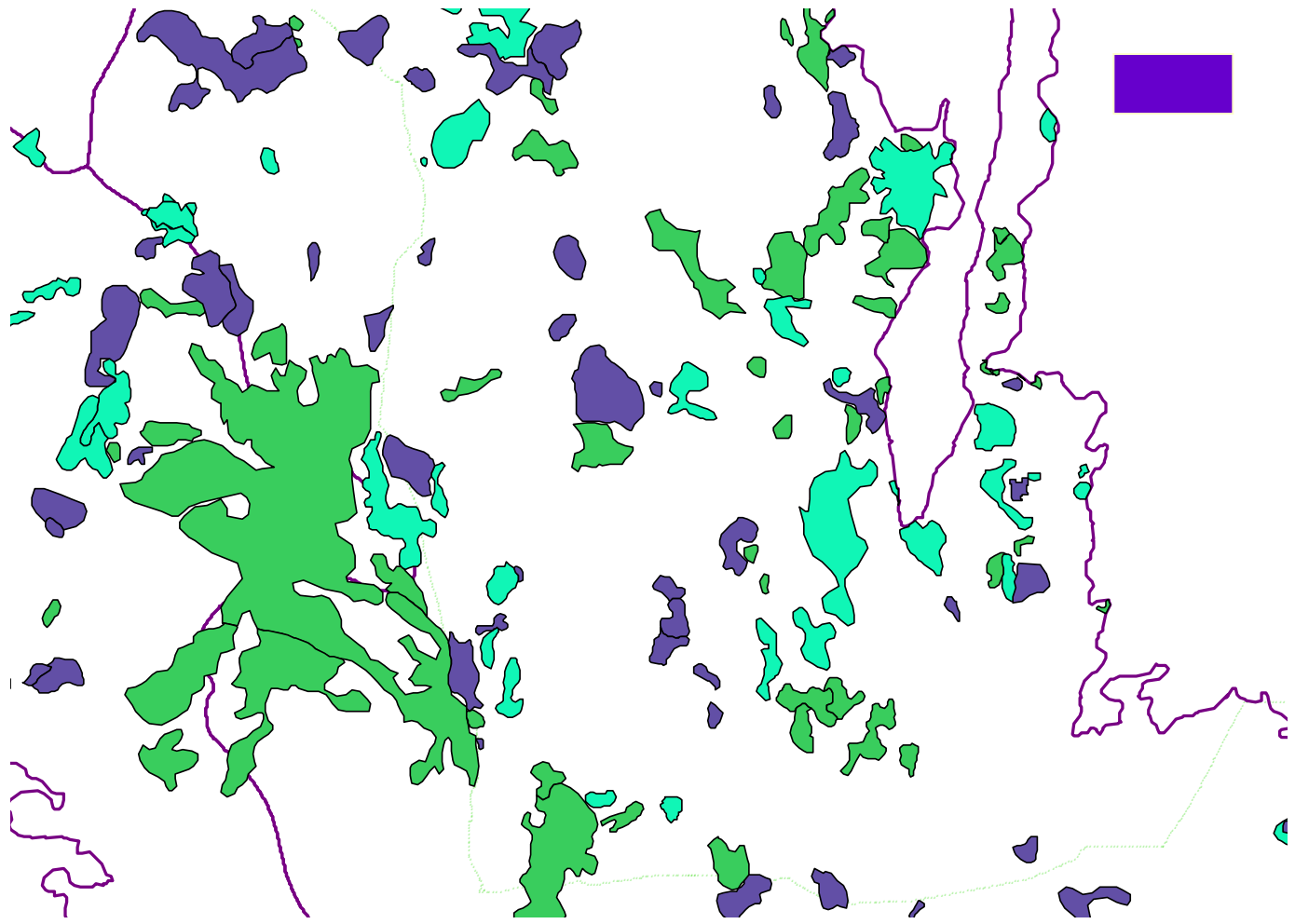
NWH 1998



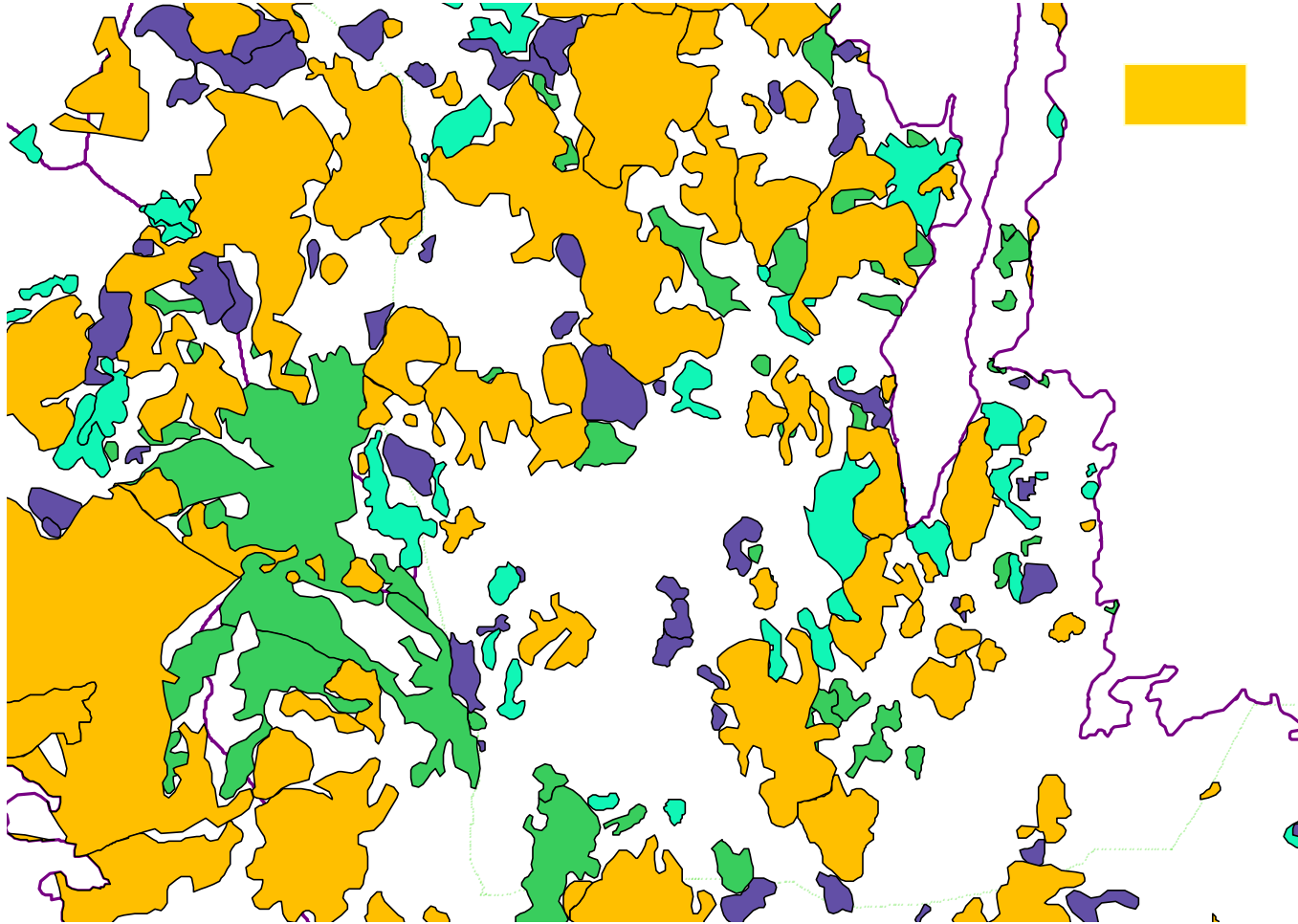
NWH 1999



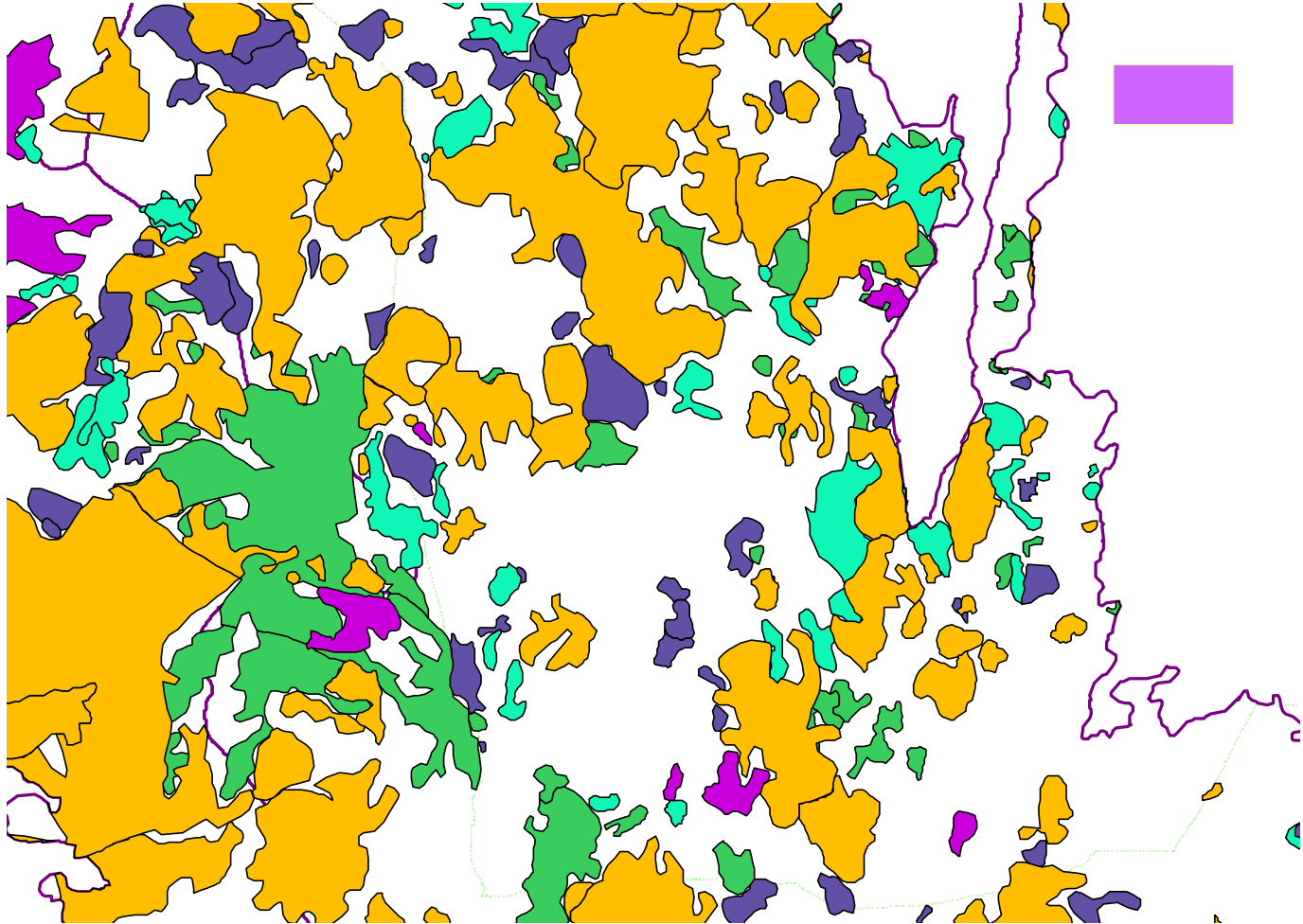
NWH 2000



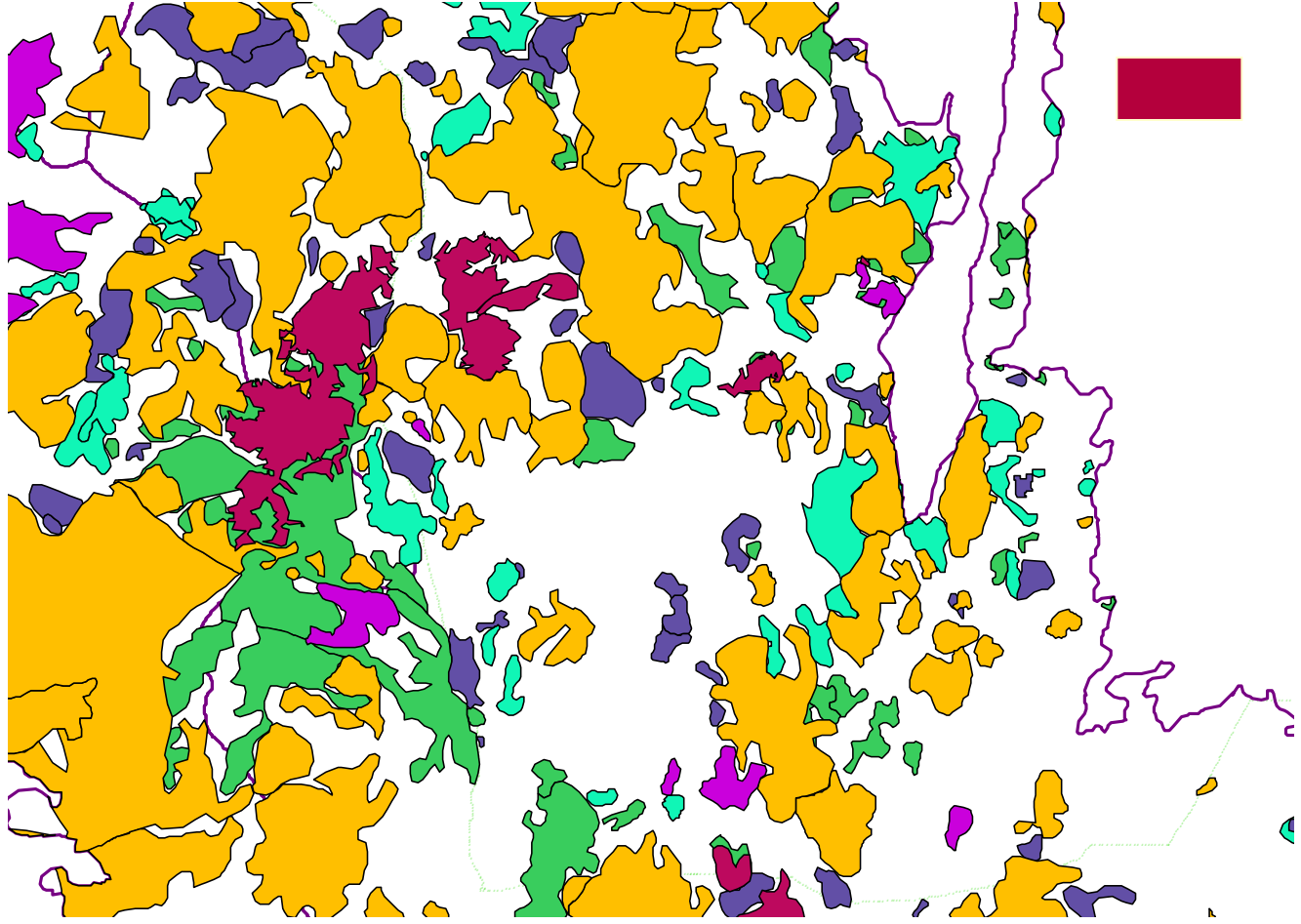
NWH 2001



NWH 2002

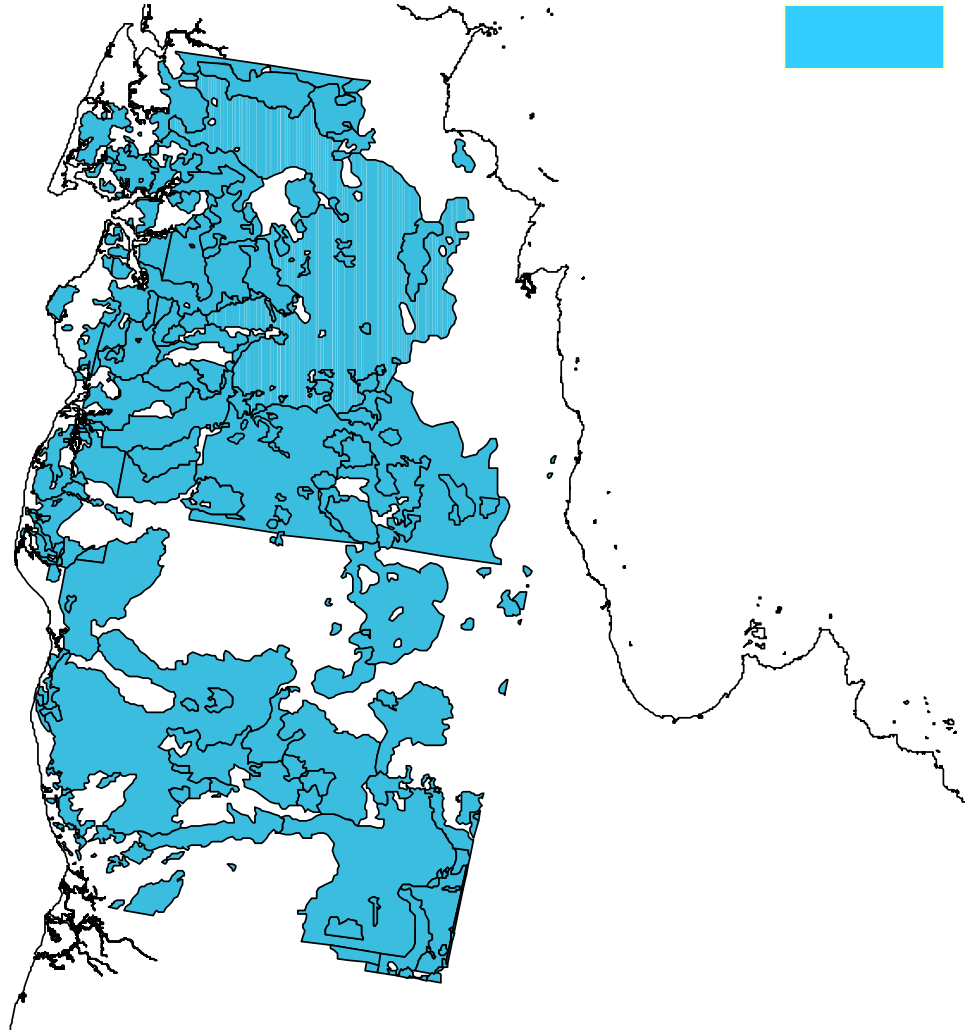


NWH 2003

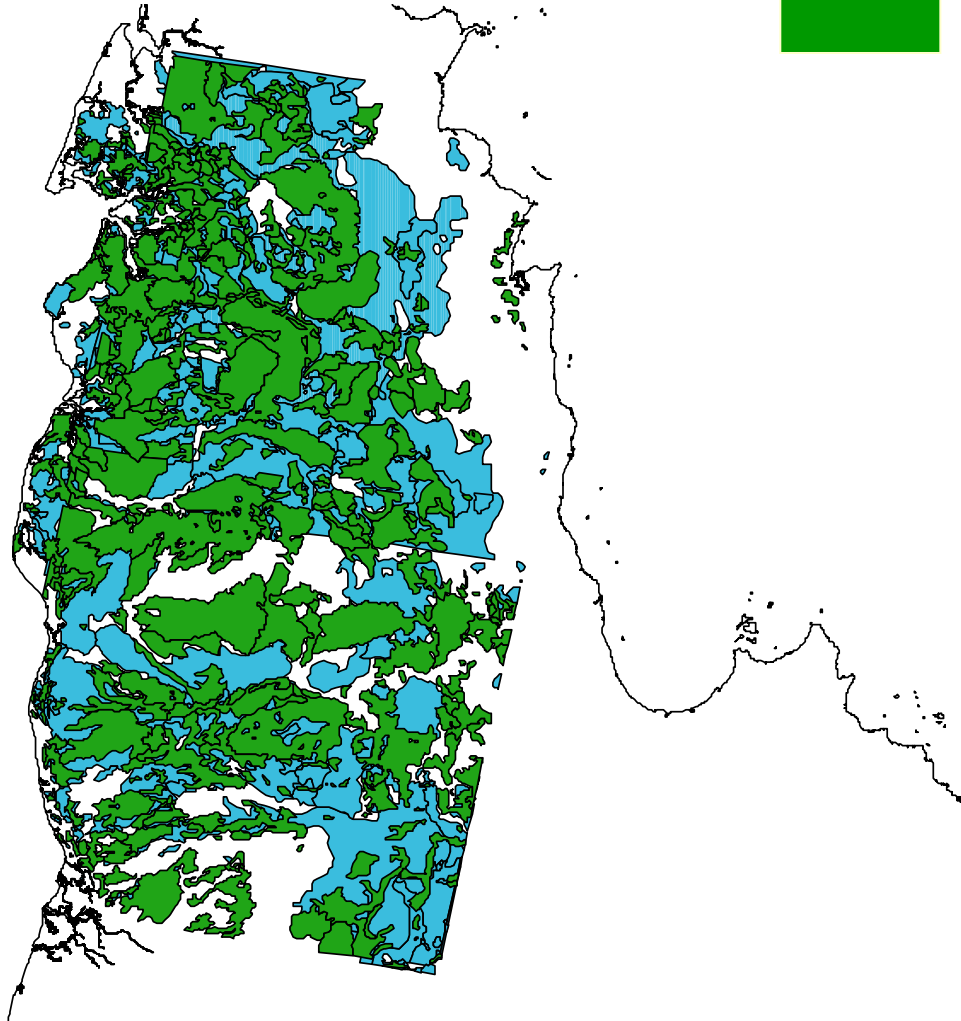


Cape York Peninsula

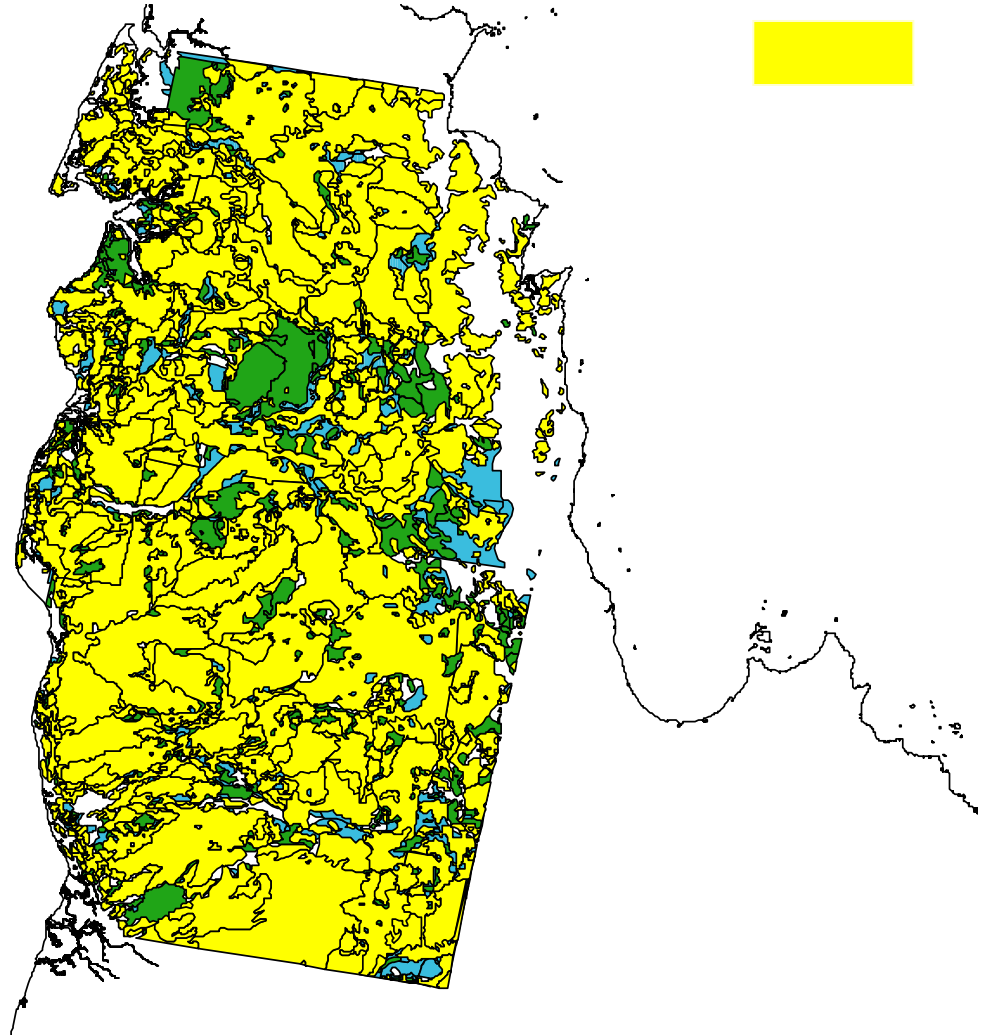
CYP 1999



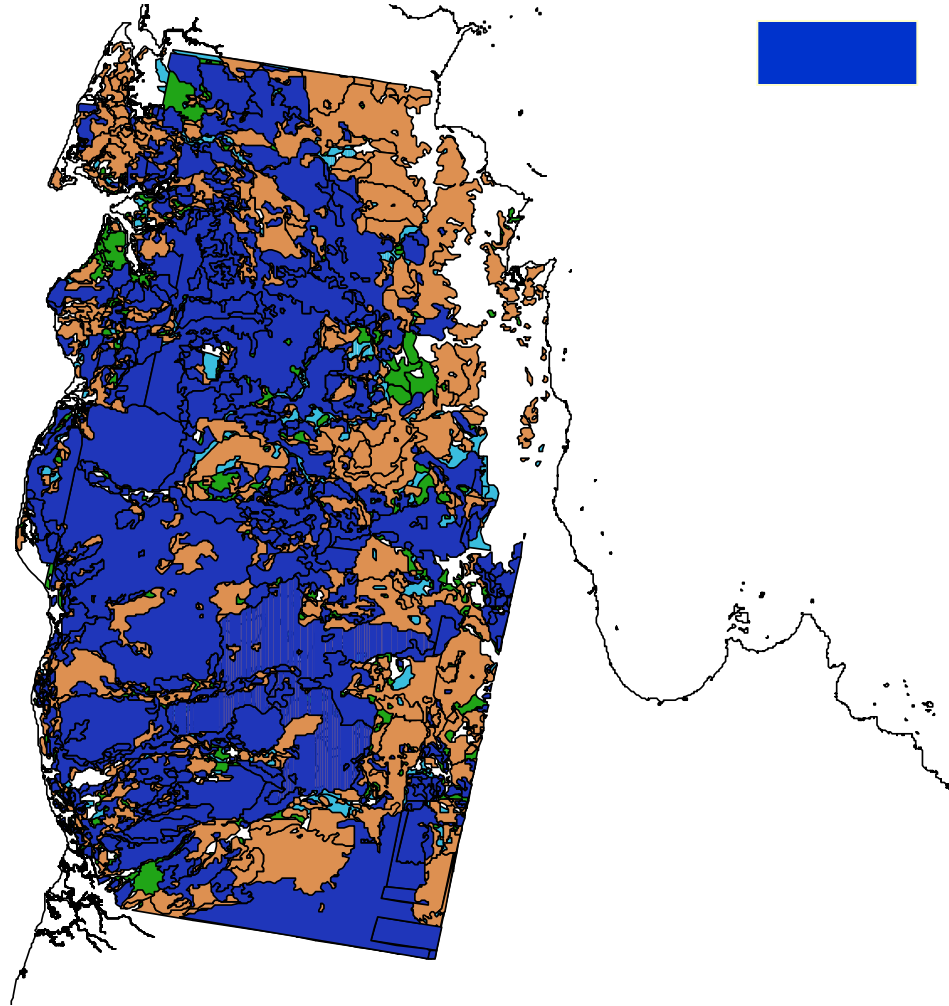
CYP 2000



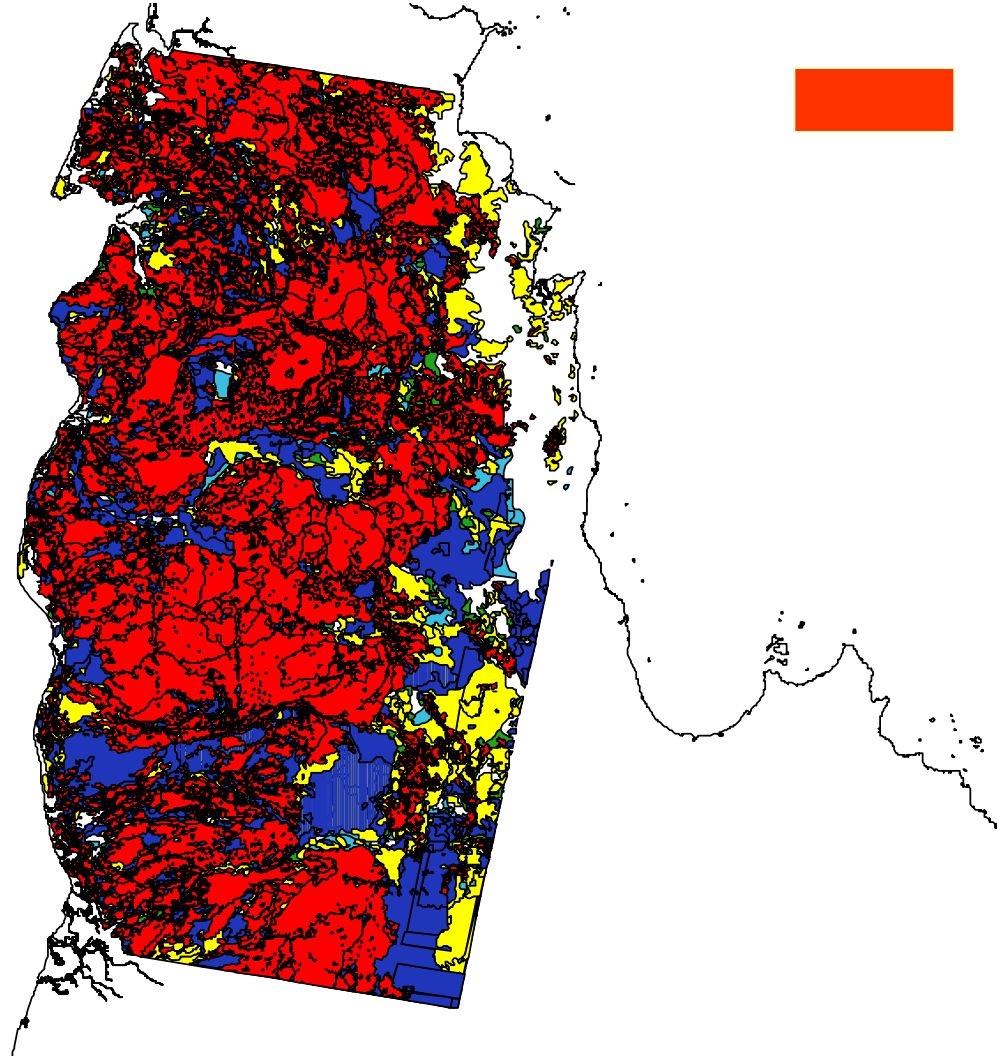
CYP 2001



CYP 2002



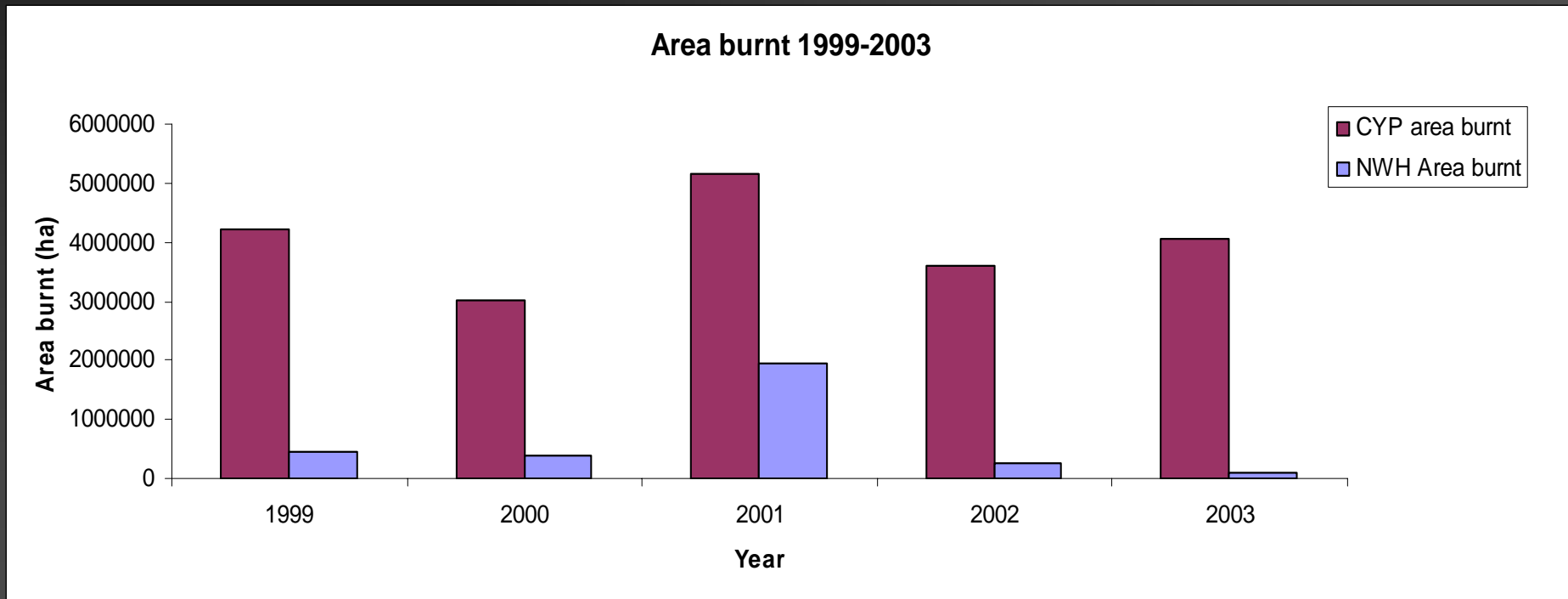
CYP 2003



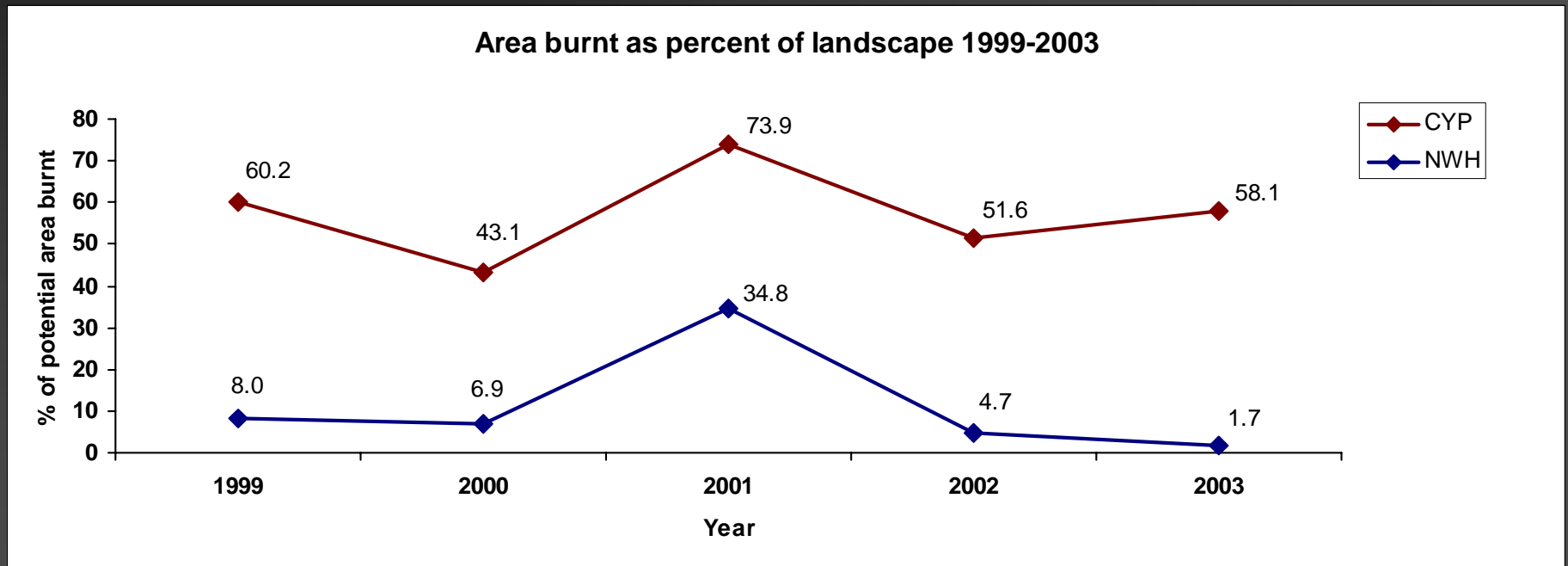
Total area burnt

CYP mapped area:
6,976,323 ha

NWH mapped area:
5,601,598 ha



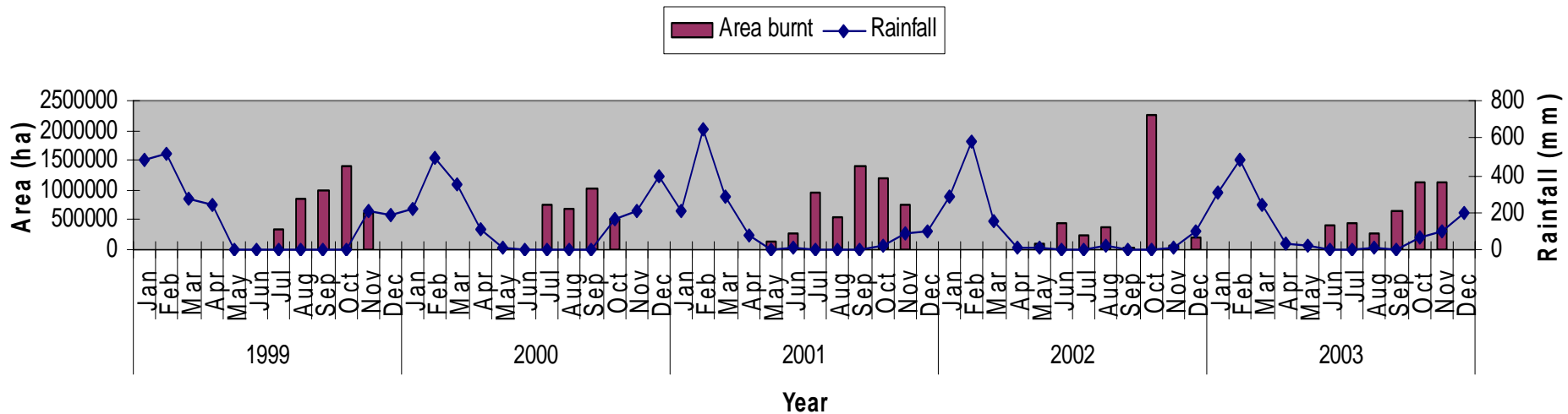
As percent of 'landscape'



Annual patterns

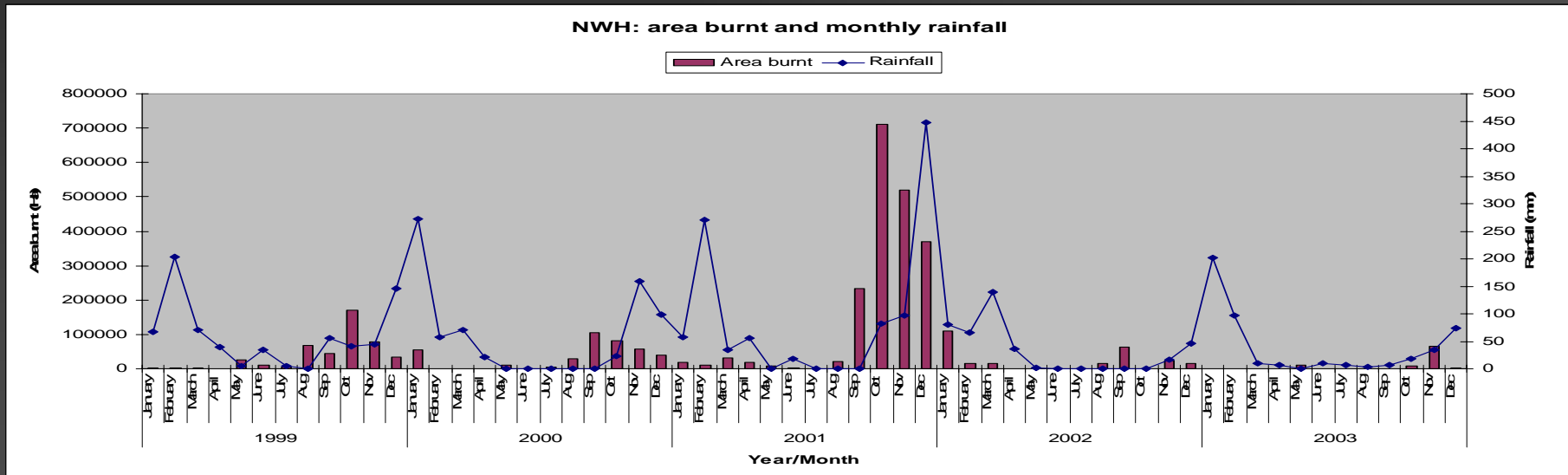
- Both areas have a strong wet season influence

CYP 1999-2003: area burnt and monthly rainfall



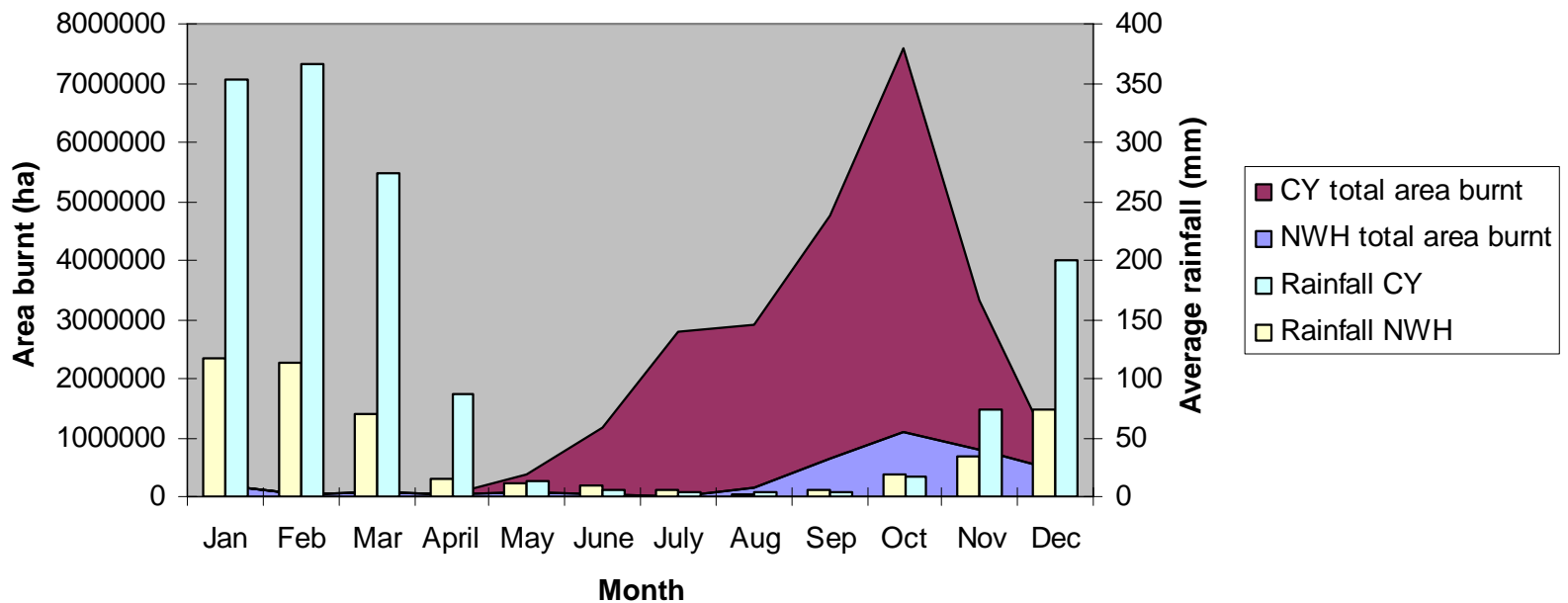
Annual patterns

- But the pattern is slightly different in the NWH



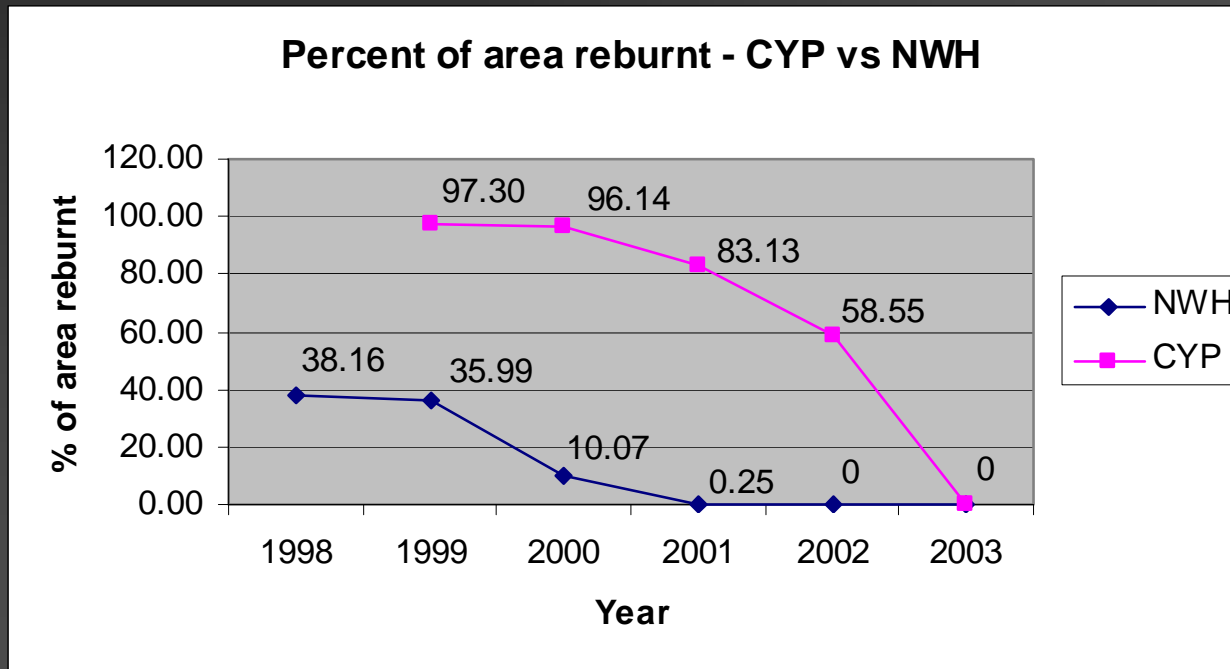
General pattern

Comparison NWH/CYP total area burnt and average rainfall 98-03



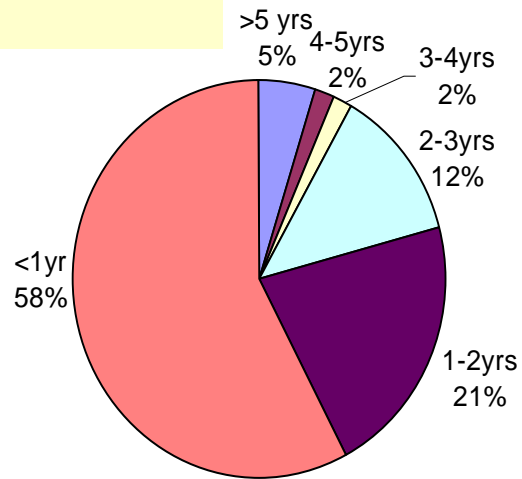
Fire frequency

- The fire return interval is much shorter on CYP

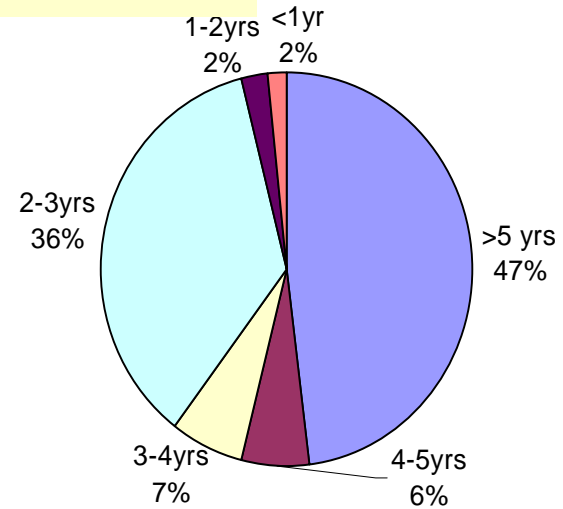


Landscape fire age

CYP



NWH



Implications / suggestions

- Management needs to be in context with the broader landscape
 - ❖ Sub-regions are a useful scale for strategic fire management
 - Need to be careful with savanna-wide generalisations
 - ❖ Differences between semi-arid and more mesic areas
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Implications / suggestions

- Opportunities to value add (eg. Mammal decline, climate modelling)
 - Implications for CRC data management: consistent methods, determine core variables, agreed terminology
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